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<p>ELECTRONIC WASTE (WEEE)</p>

The views expressed here do not necessarily represent the official opinion
of the European Parliament

Summary

With the proliferation and staggering rate of technological development of electronic equipment, the question of how to dispose of it is becoming increasingly urgent. Individual states, such as the USA, Japan, Brazil and Switzerland, are working towards legislation to regulate the situation. The European Union countries appear to be waiting for European-level regulation. This paper sets out the background and seeks to convey the present stage reached in the debate.

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A. Introduction

The problem of electronic waste has been a matter of concern among experts since the early Nineties. Since then many countries have undertaken studies into encouraging the recycling and environmentally-compatible disposal of this waste stream. The definition of 'electronic waste' (WEEE)¹, has yet to be standardized.

Electronic waste is taken here to mean all arisings as waste of electronic equipment and parts, including household appliances, electronic entertainment equipment, office, information and communications, cash processing equipment, electric tools, measuring and control instruments, lighting, toys, clocks and watches, laboratory and medical equipment, visual recording and receiving equipment, etc., containing electrical or electronic components.

Electronic waste is a small percentage (less than 1%) of the waste generated in the Member States of the EU. Recycling or disposing of it does, however, represent a problem, as it contains a multitude of components including many hazardous substances such as lead, cadmium or PCBs. The volume of electronic waste is rising with the increasing number of items of equipment being used in households, offices and in general in the industrialized world. Over the next 10 years the German Federal Environmental Office for example forecasts an annual 5-10% increase in Germany while the Commission assumes 3-5% growth for the Member States of the EU.

Until some way into the Nineties the usual way of disposing of electronic waste was simply to separate the ferrous metal it contained. The rest, which was not so easy to deal with, would end up on the waste dump or in the incinerator. Since then a small scale industry has grown up in Germany specializing in electronic waste, comprising about 300 firms. Their methods produce much higher recovery rates, but are expensive (see B.2 below). Large scale industrial scrap firms have now also seen the potential in electronic waste. Unlike the small firms they do not always use their sophisticated recycling techniques but prefer conventional, environmentally unfriendly but more profitable methods. As they work closely with the local authorities who are responsible for disposal, they have first choice of equipment dumped in household rubbish and bulky waste collections. They offer especially low-price disposal of commercial electronic waste. The environment bears the final cost, as about 70% of the residue after they have finished with it is contaminated special waste which, moreover, is not always properly disposed of. In many countries the public is still ignorant of the problems caused by such waste.

These are the problems to be dealt with by waste legislation. Bills in Germany, the Netherlands, the USA, Japan and elsewhere have not yet reached the statute book. The Commission now has electronic waste legislation on its agenda for 1998.

We shall seek to describe the situation, using Germany as an example, and to give a brief history of the regulatory effort in various countries so far. We shall wind up with a look ahead to the factors that need to be taken into account in EU legislation.

¹ In English usage the term 'waste of electric and electronic equipment' has gained a footing, abbreviated to WEEE.

B. How it arises and how it is dealt with

Electrical and electronic equipment is complex and many substances with environmental implications are used in its manufacture. In German households alone there are at present some 900 million pieces of electrical and electronic equipment including about 40 million colour television sets. About 1.5 m tonnes of electronic waste arise every year in Germany (see table 1.) Between 7 and 10 m tonnes arise in Europe as a whole; the cost of disposing of it has been estimated at 5 bn ECU for the year 2000.² However, in the 15 Member States electronic waste accounts for less than 1% of the estimated total waste of 1.6 bn tonnes per year.³

Table 1: Electronic waste arising in Germany (round figures)⁴

Quantity/tonnes	Origin	Number (million)
560 000	Large household appliances (white goods): cookers, washing machines, refrigerators, dishwashers etc.	12
250 000	Entertainment electronic goods including 150 000 tonnes of television sets	40
72 500	Small domestic appliances	40
10 000	Electrical power tools	3
206 000	Batteries	807
31 500	Lighting	695
12 800	Communications equipment	no details
98 000	Information technology appliances	38
35 000	Medical equipment	no details
165 000	Switchgear, industrial control equipment	no details
60 000	Other	no details
1 500 800	Total (about 900 000 t from domestic households and 600 000 t commercial waste)	1 635 + x

² See the answer of the German Federal Government to a written question by the Alliance 90/Greens political group in the German Bundestag, document 13/2199.

³ COM, Recovery of WEEE, p. 24.

⁴ According to details provided by the Central Association of the Electrical Engineering and Electronics industry (ZVEI), in: BVSE, *Wie geht das?* p. 3. See similar Federal Government data op.cit. question 9, based on estimates for 1994 and 1998 (the latter at a total of 1.8 m tonnes).

1. The initial situation

Unlawful appliances are usually put out with household rubbish. This kind of disposal raises a number of difficulties. Firstly, the hybrid nature of the waste produces an uncontrolled input of dangerous substances when the waste is dumped or incinerated. And secondly, mixed disposal does not meet the requirement laid down in the German 'Cycle economy and Waste Law', that priority be given to recycling before any other kind of disposal.

There are up to 1000 different substances in electronic waste. Because of the close intermingling of the materials down to the microscopic quantities it is often quite impractical to separate and sort them; there is also usually little information on their composition especially as components often originate in the Far East.⁵

Electronic waste contains a whole range of pollutants including numerous heavy metals such as lead and cadmium, for example in CRSs or plastics stabilized by heavy metals, condensers containing PCBs, and polybrominated biphenyls etc. used as fire retardants in casings and circuit boards.⁶

On the other hand electronic waste contains valuable raw materials including many rare metals. Apart from condensers and some plastics, present-day technology is capable of preparing most components from an electronic or electric appliance for recycling. 95% of the mass of a control technology switchboard - a common piece of equipment - can be recycled.⁷

Table 2 WEEE Composition (by mass)
(white, brown and IT/office products)⁸

Material	Proportion of total (%)
metals	49.0
plastics	20.7
glass/ceramics	18.1
wiring	0.4
printed circuit boards	1.2
wood	0.3
rubber	0.4
insulation	0.8
concrete	4.1
other	4.9

Table 3. Household waste WEEE
arising (per cent) by mass)⁹

Household appliances	%
white goods	70
washing machines	28
televisions	9
brown goods	15
IT equipment	6
other	9

The solution has yet to be found to the problem of recycling plastics in electronic waste. The main problem is the variety of plastics and the presence of bromium salts in them as fire retardants which, when processed using heat, may produce dioxins and furanes. Separating plastics is also made no

⁵ Koellner/Fichtler, p. 16.

⁶ More details in Koellner/Fichtler, p. 16 et seq.

⁷ Koellner/Fichtler, p. 24

⁸ Strange, Preliminary Document/First European Waste Forum (Session 4: WEEE), Brussels, 11/1997, p.2.
IT=Information Technology.

⁹ Ibid.

easier by the presence of some 2000 other additives, many of which are known to be potential pathogens.¹⁰ The situation may be expected to improve with changes in materials and better labelling in future generations of equipment, but this does not solve the problem of existing equipment, and we should bear in mind the numbers involved (Table 1) and the average life of 5-10 years.

2. Recycling by SMUs

Since the presentation of the draft Electronic Waste Ordinance (see D.1 below), a small-scale industry recycling electronic waste has come into existence in Germany. Its trade associations¹¹ have drawn up a small firms electronic waste recycling plan (MERK). Disposal basically occurs in three stages:

- Preliminary manual dismantling using pneumatic tools. Apart from components containing pollutants, large transformers and ventilators, steel frames etc. are manually dismantled.
- Removal of pollutants, manually, as the equipment is dismantled. Wet condensers in view of the PCB risk, together with Ni-Cd batteries, lithium batteries, mercury switches and LCD-displays are dismantled. Material storage and disposal in compliance with waste legislation and storage requirements.
- Cold grinding and separation (e.g. dry mechanical preparation) in stages, reducing electronic components in a series of mills to the consistency of sand. This is then separated by various processes (magnets, high performance screens, sieves) into metal, plastic and synthetic fibre.

Seven separate fractions are recovered:

1. Metals are separated into pure fractions, compounds being mechanically worked. These fractions are then melted down.
2. Plastics are recycled if they can be reliably sorted, otherwise (as mixed plastics) thermal and energy recovery.
3. Glass may be recycled as front panel glass by the glass industry; contaminated screen glass (cone glass) may be used for slag.
4. Metals can be extracted from circuit boards by thermal and electrolytic treatment; the ash residue is dumped.
5. Components are reconditioned if possible otherwise burnt as special waste or dumped below ground.
6. Plugs and sockets from which metals are recovered by mechanical and thermal processes; plastics are recycled or thermally recovered (see 2).

¹⁰ Koellner/Fichtler, p. 21 et seq.

¹¹ Federal association for secondary raw materials and disposal (Bundesverband Sekundärrohstoffe und Entsorgung (bvse) and Federal association of small and medium sized electrical and electronic equipment disposal and recycling undertakings (Bundesvereinigung mittelständischer Elektro-und Elektronikgeräte-Entsorgungs- und Verwertungsunternehmen) (BEVU).

7. Wiring, the metal parts of which are mechanically recovered, while plastics are recycled or thermally recovered. (see 2).

The quantity of non-recyclable material depends on the nature of the waste. For example, TV sets leave only chipboard housings in some cases, condensers, the illuminant, and plastics containing bromium, as waste or special waste. The recovery rate is then about 70%, and in more recent TV sets with plastic housings about 90%. Office and communications equipment also achieve about 90%, although these rates can be manipulated as they are as open to interpretation as are the rates under the 'Green Dot' scheme.

As electronic waste processing is usually manual it is also very expensive. This and the under-use of existing capacity has been responsible for the economic difficulties which have hit the industry (falling prices)¹². The small operators also obtain most of their waste from trade and industry while they have hardly had access to local authority sources (see B3). The manual dismantling of equipment required for recovery currently costs well over 500 ECU/t in Germany, although a fall in costs might well be possible. Table 4 shows examples of costs. In Europe costs vary between 180 ECU/t in Scotland and 2445 ECU/t in Austria.¹³ A rational recycling logistics system is vital. Every local authority should have collection points for electronic waste, while dismantling and sorting units should be regional (district level), and special processing units at inter-regional level, depending on arisings and plant capacity.¹⁴ With comprehensive use of technology the Federal Government estimate logistics and disposal costs at about ECU 1 billion in Germany.¹⁵

Table 4: Selected average cost (1994) of the disposal of electronic waste (free at recycling plant) in Germany¹⁶

Type of equipment	Range
VDUs	15 - 32.5 ECU/unit
PCs with monitor	22.5 - 45 ECU/unit
Refrigerators and freezers	15 - 25 ECU/unit
Domestic appliances	7.5 - 12.5 ECU/unit
Entertainment electronic equipment	0.75 - 1.85 ECU/kg
Computer peripherals	0.75 - 1 ECU/kg

¹² Federal Government (footnote 2), answer to question 14.

¹³ Strange op. cit. p. 7.

¹⁴ Schlögl, p. 40.

¹⁵ Federal Government (footnote 2), answer to question 22.

¹⁶ Tiltmann/Schüren, p. 258.

3. Conventional scrapping methods - not so golden oldie

By contrast with the small firm approach described above, in the past electronic waste was taken by scrap metal merchants who shredded it to recover the metals and were able to recover about 30% of the waste while producing large quantities of special waste. The expense of disposing of the special waste started them looking for cheaper albeit illegal ways of disposing of that waste. The resulting scandals led to governmental regulatory action (see D below) and encouraged forward-looking companies to find better solutions.

The major scrap firms are now enviously eyeing the development of the smaller firms and using their economic muscle, in respect of local authority waste in particular, to get into the electronic waste business for themselves. They have access to domestic appliances via bulky waste collections and to used commercial equipment via low disposal prices. However the large scrap firms were unable either to establish or take over specialist dismantling operations profitably at low prices, and they therefore initially reverted to the traditional shredder methods; in some cases they handed over the preliminary dismantling to charities in which the equipment was gutted for the shredder plants using subsidized labour. Since then some of them have invested in technology or are themselves supplying to dismantling units, so that they too are now offering expert dismantling and recycling. However, in many cases, in the absence of more sophisticated methods, the recovery rate associated with old-fashioned scrap processing is largely unchanged (i.e. producing 70% of contaminated special waste).¹⁷

4. Exporting waste

One cheaper alternative to any kind of processing is to export electronic waste as waste for recycling (see Cycle Economy and Waste Law). This at first sight reduces disposal costs but continues to produce environmental scandals and is ecologically unjustifiable on the ground of transport costs alone.

5. Summary and evaluation

To summarize, electronic waste in Germany is still being 'disposed of' in traditional and hence highly irresponsible because environmentally-damaging ways.

The problems facing those responsible for disposal, whether they be local authorities or manufacturers, are manifold. There is a lack of information on appropriate disposal facilities, of yardsticks for assessing offers, there is uncertainty over how a special waste disposal operator will deal with the material and how his operations are to be monitored. The electronic waste processing market is heavily influenced by external factors such as the degree of public environmental awareness and the unwillingness to accept special waste dump sites.

The specialist small firm answer to the electronic waste problem will, in the absence of regulation of electronic waste treatment, be unable in the long term to prevail against the power of the major scrap companies. Their associations are therefore calling for immediate regulation to prevent the free-rider effect which could lead to the collapse of the small specialist disposal industry. The local authorities and local authority associations are supporting this demand as they are unable to exclude

¹⁷ Didszun: Kreisläufe im Elektronik-Recycling - zurück zu den Mißständen; Umwelt, Vol. 27 (1997), p. 3. (Electronic recycling cycles - back to the bad old ways).

electronic waste from domestic refuse collection. The unresolved matter of the cost of returning electronic waste has so far largely prevented local authority waste disposal bodies from embarking on systematic separate treatment for electronic waste and its proper processing, so as to avoid having to increase refuse charges still further¹⁸. An investigation by the Berlin Technical University has shown that some 200 out of 500 local authority waste disposal departments provide recycling centres at which electronic waste is collected.¹⁹

The situation is no better elsewhere in Europe. There follows a description of measures already taken or planned in Europe to date.

C. Production-oriented approach: the EUREKA project for 'green electronics'

It is well enough known that the keys to minimizing disposal problems are to avoid pollutants and, especially in the case of plastics, avoiding mixing materials.

In 1994, under code number EU 1140, a EUREKA project was launched with a 66-month timescale (into the year 2000) and a budget of just over 20 m ECU to set up 'green electronics' in Europe. The project, officially designated EUROENVIRON CARE VISION 2000, with Sony Europe in the lead role, represents a plan for recycling electronic consumer goods, with the emphasis on TV sets and PCs. The aim is to achieve an overall approach making possible the economic and environmentally sustainable recycling of large flows of electronic waste. The project will seek to resolve the problems of disposal in a technically and logistically profitable way. Participants in the project come from Denmark, Germany, Austria, Sweden, Spain and Switzerland.²⁰

The project opted for the **Life-Cycle Approach** to optimize disposal: electronic equipment may be durable but have only a short operating life, due to partial breakdown or technical progress. Obsolete electronic equipment of this kind is not recycled in practice. In Germany less than 10% of electronic waste is sent for recycling, which is a further burden on the environment and the health of recycling technicians.²¹ It would therefore be desirable for used parts which have not yet reached the end of their life to be incorporated in new products, although this might meet manufacturer and consumer resistance.

The more efficient use of materials at the manufacturing stage, together with the disposal of 'End-of-Life' equipment, is crucial to any policy for the avoidance of electronic waste. It includes for example forward-looking product design to simplify the eventual, and expensive, dismantling process, longer life for equipment and its components or the ability to upgrade it with the latest components (e.g. chips including more up to date control software). There is however a drawback in that for example longer equipment life might delay the purchase of newer and more environmentally compatible equipment. We should not however forget that manufacturing itself is harmful to the environment.

¹⁸ See motion by the SPD Group of 28.4.1997, German Bundestag, Document 13/7561. The Münster (Westphalia) refuse management plant, as pioneers in the separation and recycling of waste, issue contracts for the recycling/disposal of electronic waste after prior vetting of applicants.

¹⁹ Strange, op. cit., p. 6.

²⁰ See written question by the Alliance 90/The Greens Group, German Bundestag, Document 13/2199 (footnote 2).

²¹ Ibid; on the Life-Cycle Approach see CUTTER INFORMATION CORPORATION, Product Stewardship Adviser, News and strategies for lifecycle management of electronics, see also <http://www.cutter.com>.

The Federal Government expects that basic principles for green electronics will be introduced for of manufacturing, recycling and disposal between the years 2000 and 2005, on the basis of a lengthy process of continual product improvement.²²

D. Attempts to regulate electronic waste treatment

In 1991 the Federal Ministry of the Environment submitted the first ever draft electronic waste ordinance (EVO), taking a comprehensive approach to electronic and electrical equipment. This triggered a prolonged debate in all industrialized countries on the handling of electronic waste.

The debate revealed the importance of producer responsibility by manufacturers and dealers or importers in improving recovery and recycling rates. Some however also point to the consumer's shared responsibility on the basis that it is often social trends (and fashion phenomena in particular) which encourage purchase decisions. The impact on the labour market is another factor. The repair of and trade in used equipment could disappear as a result of producer-responsibility legislation. On the other hand, electronic waste recycling will create many jobs as the dismantling of used equipment alone is labour intensive. Moreover these would be jobs for the relatively unskilled workers who are most hit by unemployment. Producer responsibility could also encourage manufacturers to lease equipment rather than sell it and then employ more people in customer services on maintenance and upgrades.²³

The key questions affecting legislation and the effectiveness of future laws are:

- What is covered by the term electronic waste (WEEE)?
- Who pays for disposal?
- Is producer responsibility the only answer? (For example, could responsibility be shared with local authorities and consumers?)
- Is legislation actually necessary? (What would be the benefits of voluntary commitments?)
- How can sufficient recovery of material be achieved to guarantee recycling firms a reliable and adequate flow of secondary material?
- Are there any markets for recycled products?
- Does legislation constitute barriers to trade?

²² Federal Government (footnote 2), answer to question 8.

²³ Strange op. cit., p. 8.

1. Electronic Waste Ordinance Or it Equipment Ordinance (EVO) in Germany

The 1991/2 draft EVO, which was not however adopted, took a comprehensive approach in both its scope and the responsibilities imposed. The aims of the draft were based on the objectives of the 1994 'Cycle Economy and Waste Law' then in the process of adoption, of which it would have been an implementing provision. Electronic waste was to be avoided or reduced by a number of measures. It provided for improvements in materials, manufacturing technology, collection systems to achieve extensive return of used equipment followed by reuse or recycling and finally proper disposal.

All manufacturers and traders (and in particular importers) of electrical or electronic equipment were to be liable under the EVO, in line with producer responsibility which under Section 22 II(5) of the Cycle Economy and Waste Law extends to the taking back, recycling or disposal of the products. The draft EVO contained a comprehensive inventory of products and product categories and laid down the take-back and recovery obligations of those liable.

Hearings of the parties involved revealed considerable reservations by industry towards the scheme. The Central Association of the Electro-technical and Electronics Industry (ZVEI) in particular was unwilling to commit itself to any comprehensive producer responsibility as now laid down by the Cycle Economy and Waste Law. The Federal Government therefore came round to the view that the problems could best be solved initially by measures in individual fields; it decided to give priority to measures governing the most important segments of electronic waste, i.e. information and telecommunications technology (IT), white goods and TV sets.²⁴ Moreover, the recycling of these types of equipment is the most rewarding. The IT industry in particular adopted an accommodating approach and sought to bring greater environmental awareness into its manufactures and conducted its own dismantling trials. The government then, in March 1996, issued a draft ordinance on IT equipment providing for shared responsibility between the local authorities responsible for collecting electronic waste and the parties subject to producer responsibility for transport, recycling and/or disposal. The government is trying to be in a position to adopt the ordinance before the end of this legislative period (i.e. before the Bundestag elections in autumn 1998).

In any event the treatment of electronic waste will have to comply with the Cycle Economy and Waste Law which came into force in October 1996, and gives priority to the recycling of products or their components. The basic obligations to recycle and dispose of waste are laid down in that law, which also requires that emission control and hazardous substances legislation has to be taken into account. Recycling and disposal firms have to be especially qualified to meet these requirements and Section 16 of the law requires them to be certified. The Federal Government therefore agreed to the system proposed by the industry associations (ZVEI and VDMA) of certification for recycling firms, accompanied by official monitoring of compliance with plant and hazardous substance legislation; further measures by the regulatory bodies seemed initially unnecessary.²⁵

There are various reasons for the slowness of progress since the 1991 first draft. At first the topic was new and relatively undebated, and then much of industry, which was to have been involved in the process, was insufficiently innovative. The 1994 coalition agreement adopted the principle of deregulation, thus banking on voluntary self-regulation rather than legislation. Finally, the ordinance needed the approval of the Bundesrat, in which the local authorities were able to voice their

²⁴ Federal Government (footnote 2), answer to Question 20.

²⁵ Federal Government (footnote 2), answer to Question 19.

conflicting interests as against the Länder. This reduced the chances of adoption as there is no conciliation procedure in the case of ordinances as opposed to bills subject to an affirmative vote by the Bundesrat.

2. Regulatory provisions in other countries

In the **USA** a Commission comprising representatives of the environmental authority, the Senate and industry proposed that an eco symbol be awarded for taking back old electrical appliances. Detailed refurbishment and recycling requirements were described, and regulations for recycling-friendly product design have been drawn up.²⁶ Bills are now in progress in several States.

Japan has had an ordinance on the return of large items of electrical equipment including refrigerators.²⁷ More ambitious draft legislation has been drawn up.

Brazil has prepared a waste industry strategy with special provisions for the return of electronic waste.

Switzerland plans to require dealers, manufacturers and importers (producer responsibility) to take back electronic waste, and export controls. The return of goods is to be free of charge if a similar new piece of equipment is being bought or it can be proved that a disposal charge was paid in advance. The Swiss ordinance lays down minimum standards for waste treatment. Priority is laid on recovery, especially of metals. Plastics, if there is no ecological sense in dismantling them, are incinerated.²⁸

In **Norway** a working party in 1996 recommended that by 2000 the Government introduce a controlled collection system to make at least 80% of electronic waste available for recovery and recycling. The bill drafted by the working party provides for domestic electronic waste to be delivered free of charge either to a local authority waste dump or to the dealer, while businesses could return their electronic waste free of charge to dealers only if they purchased comparable equipment. Responsibility for collecting, recycling or other treatment of electronic waste would lie with manufacturers and importers. Agreements with the electrical and electronics industry could also be concluded on the objectives of waste treatment operations.²⁹

The overall picture in the **EU countries** varies. While Germany, the Netherlands, Denmark and Sweden have recently proposed their own draft provisions, Finland, France, Austria and the UK are waiting for a European directive. Italy has imposed take-back obligations for some types of electronic waste; if the industry has not set up collection systems by the end of 1999, a 10% deposit will be charged on household appliances.³⁰ France would like to conclude take-back agreements with industry; Austria has concluded voluntary agreements with industry on the basis of the substance of the German EVO.³¹ Many countries are running pilot projects, which have revealed the difficulty of setting up an effective collection system.³² Other countries such as Greece, Ireland and Portugal do not seem to have woken up to the problem.

²⁶ Koellner/Fichtler, p. 200 et seq.

²⁷ Koellner/Fichtler, p 201.

²⁸ SiLine, 26.3.1997, http://www.silin.com/880_umwelt.

²⁹ Haznews (ISSN 0953-5357), May 1996.

³⁰ COM, Recovery of WEEE, p. 32.

³¹ Koellner/Fichtler, p. 200.

³² COM, Recovery of WEEE, p. 38 et seq., especially p. 51 et seq.

Local authority schemes are the cheapest, while retailer-based return systems are usually much more expensive.³³

3. Commission plans

The Commission intends to submit a draft directive by October 1998. It is taking a comprehensive approach, i.e. the directive is to cover all electrical and electronic products and apply to both domestic and business waste. It will therefore be based on producer responsibility of the manufacturer/importer. When purchasing a new piece of equipment, the final consumer is to be entitled to return electronic waste free of charge. The proposal is that this should be financed by a disposal charge added to the price of new products; for equipment already on the market to which producer responsibility cannot be attached, a further charge on purchase will initially be made. The directive is also intended to include clear definitions and in particular to restrict the use of heavy metals to a transitional period.

4. Reactions of European industry

The European electrical and electronics industry responded to the Commission strategy as laid down in October 1997 with an 11-point statement.³⁴ It warns against jeopardizing individual markets and the competitiveness of European industry as could result from varying national transposition of the directive.

The directive should not prohibit individual substances; this would have to be done in relation to existing European legislation and in accordance with OECD measures and the Basle Convention. The industry was seeking to remove dangerous substances from its products.

Responsibility would have to be shared between all parties in the product chain, thus including private and business consumers.

The directive should be open to solutions put forward by the industry, manufacturers were seeking to use used or recycled parts in their new products.

Local authorities, the respective industries or companies should be responsible for collecting and recycling electronic waste. The directive should not cover 'historical' waste. Standards for marking materials used should be developed in cooperation with the appropriate standards institutions. The industry rejected a Commission proposal for a data bank on materials used as unnecessary and expensive red tape.

³³ Strange, p. 7.

³⁴ EACEM, EECA, ECTEL, ELC, EUROBIT, EUROM II, EUROPACABLE: Comments on the DG XI Working Paper on Management of Waste from Electrical and Electronic Equipment (WEEE) – 11 Bullet Points –, Draft Version 2 December 1997.

5. Summary

Nearly all the Member States, like other major industrialized countries, have recognized the need for action on the disposal of electronic waste. Developments in the pioneer countries have led the Commission to take a comprehensive approach as regards products and producer responsibility, as proposed right at the start in Germany. Industry on the other hand wants a great many changes and refers to its own actions.

The description of events in Germany shows the difficulties to be overcome. The Commission will be submitting its proposals by October 1998.

E. Looking ahead

Electronic waste raises serious problems to which as yet no convincing solution has been brought into full-scale operation. In general, recycling is feasible and would be environmentally beneficial³⁵. Effective legislation must be introduced at European level if distortions of competition in the single market are to be avoided. It will have to be soon, as older and less easily disposed of equipment is piling up in the waste. The framework will have to be established soon for the sake of the large and small companies involved in the recovery of electronic waste. It would make sense on both environmental (transport logistics) and economic (jobs, competition) grounds to support decentralized small and medium-sized undertakings, which would also coincide with the EU's policy of giving preference to SMUs.

As with waste in general, attention needs to begin with manufacturing, i.e. by avoiding hazardous components and reducing the variety of materials used and labelling them. Standardization could be of help here. A regulation or directive could encourage industry on these lines.

The dispute over producer responsibility or shared responsibility by consumers is pointless. The question whether supply or demand is more responsible for consumption can never be objectively answered. As the bottom line is who pays, shared responsibility cannot be avoided. Even the plans in many countries for take-back free of charge, on which public acceptance is largely dependent, cannot prevent industry adding the cost to the price of its products. The consumer always pays, whether for ecological crime or for preventing it. That is why the debate on the distinction between consumers and taxpayers does not lead very far either. The vital point about electronic waste is that harmonized European rules must be adopted, and soon.

³⁵ See COM, Recovery of WEEE, p. 99.

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